

8.35 MW WIND POWER PROJECT AT GUDDARANGAVANA HALLI, DISTRICT CHITRADURGA, STATE KARNATAKA IN INDIA



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Summary:

SGS United Kingdom Ltd has performed the verification of the project 8.35 MW wind power project at Guddarangavana Halli, District Chitradurga, State Karnataka in India (349) against VCS Standard Version 3.1. The verification includes confirming the implementation of the monitoring plan of the VCS Project I D 349, dated 10/11/2009 and the application of the monitoring methodology as per AMS.I.D version 13 dated 14/12/2007. A site visit was conducted to verify the data submitted in the monitoring report.

The proposed project activity is the generation of renewable electricity through the installation of WEGs. The total installed capacity of the project activity is 8.35 MW, eight number of WEGs of 950 kW and one WEG of 750 kW are involved in the project activity. The proposed project activity is located over the Guddarangavana Halli, District Chitradurga, State Karnataka in India. The generated electricity from the project activity is supplied to the southern regional grid of India.

The report describes a total of 11 findings which include:

- 03 Corrective Action Requests (CARs);
- 08 Clarification Requests (CLs);
- 00 Forward Action Requests (FARs); and

All findings have been closed satisfactorily

SGS confirms that the project is implemented in accordance with the validated VCS Project Description. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and validated project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 47,297 tCO₂e emission reductions during period 01/04/2009 up to 30/09/2011.

Abbreviations

BESCOM	Bangalore Electricity Supply Company Limited
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Carbon Emission Factor
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
KERC	Karnataka Electricity Regulatory Commission
KPTCL	Karnataka Power Transmission Corporation Limited
kWh	Kilo Watt hour
MP	Monitoring Plan
MW	Mega Watt
O&M	Operation and Maintenance
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/ Quality Control
QMS	Quality Management System
SGS	SGS United Kingdom Ltd.
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units
VVM	Validation and Verification Manual
WEC	Wind Energy Converter

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1 INTRODUCTION

1.1 Objective

SGS United Kingdom Ltd has been contracted by MSPL Limited to perform an independent verification of its project 8.35 MW wind power project at GuddarangavanaHalli, District Chitradurga, State Karnataka in India against VCS Standard Version 3.2. The verifiers have reviewed the GHG data collected to date for the period between 01/04/2009 and 30/09/2011.

The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the project has resulted in emission reductions as declared by the organisation or GHG project's GHG assertion;
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope and Criteria

This engagement covers verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of 8.35 MW wind power project at GuddarangavanaHalli, District Chitradurga, State Karnataka in India.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the defined reporting period.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of assurance

The level of assurance of the verification report is assessed through review of Joint meter reading and the copies of the invoices, interview with the personnel at sub-station, observation of established monitoring and reporting practices and assessment of the reliability of measuring equipment assurance engagements as selected by the Client. Materiality for the project is 5%.

1.4 Summary Description of the Project

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	8.35 MW wind power project at Guddarangavana Halli, District Chitradurga, State Karnataka in India
Project ID	349
Monitoring Period Covered in this Report	01/04/2009 to 30/09/2011
Project Proponent(s)	MSPL Limited (India – host country)
Location of the Project Activity:	Village: Guddarangavana Halli
	District: Chitradurga
	State: Karnataka
	Country: India

The proposed project activity is installation of WECs for the renewable electricity generation in Chitradurga District of Karnataka State. The total capacity of the project activity is 8.35 MW, eight number of WEGs of 950 kW and one WEG of 750 kW are involved in the project activity. The generated electricity from the project activity is supplied to the southern regional grid of India. The project activity has reduced 47,297 tCO₂e emission reductions during this monitoring period.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

This project activity is not registered under CDM; this project is registered under VCS version 2007.1. All the points were already covered at the time of validation under VCS 2007.1. Thus, the validation process is not required for this project activity.

2.2 Validation Findings

2.2.1 Gap Validation

This project activity is not registered under any other approved GHG program except VCS program and this project is registered under VCS version 2007.1. All the point were already covered at the time of validation under VCS 2007.1 and same have been checked from the registered VCS PD (<https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=349&lat=14%2E301111&lon=76%2E394167&bp=1>) and found to be meeting the requirements as per the VCS PD template. Thus, the Gap validation is not required for this project activity.

2.2.2 Methodology Deviations

There is no deviation in the methodology and thus, it is not applicable.

2.2.3 New Project Activity Instances

The project activity has already been registered under VCS version 7.1 and thus, this is not a new project activity. This is not applicable.

2.3 Validation Conclusion

This project activity is registered under VCS version 2007.1. All the points were already covered at the time of validation under VCS 2007.1. Thus, the project confirms with the validation criteria for projects as set out in the applicable version of VCS i.e. VCS 2007.1.

3 VERIFICATION PROCESS

3.1 Method and Criteria

SGS' approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

3.2 Document Review

The VCS PD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 0 of this report.

3.3 Interviews

Date	Name	Position	Short Description of Subject Discussed
18/01/2012	Mr. Ajeet Kumar Singh	Dy. General Manager (MSPL)	• Plant Operations • Project boundary • Monitoring & Measuring System • Collections and recoding of data • Data archiving system • Calibration of measuring Equipments • Operation and Maintenance procedures • CDM monitoring & Reporting documentation • Quality Assurance-Management & Operating System • Training procedures
18/01/2012	Mr. Charu Gupta	Manager (Deloitte)	• Plant Operations • Project boundary • Monitoring & Measuring System • Collections and recoding of data • Data archiving system • Calibration of measuring Equipments • Operation and Maintenance procedures • CDM monitoring & Reporting documentation • Quality Assurance-Management & Operating System

Date	Name	Position	Short Description of Subject Discussed
18/01/2012	Mr. Puneet Sethi	Consultant (Deloitte)	• Training procedures • Plant Operations • Project boundary • Monitoring & Measuring System • Collections and recording of data • Data archiving system • Calibration of measuring Equipments • Operation and Maintenance procedures • CDM monitoring & Reporting documentation • Quality Assurance-Management & Operating System • Training procedures

3.4 Site Inspections

As part of the verification, the following on-site inspections have been performed

Location: Village: Guddadarangavana Halli and Gonur District: Chitradurga State: Karnataka Country: India	
Date: 18/01/2012	
Coverage:	Source of Information / Persons Interviewed
Assessment of project boundary	Mr. Ajeet Kumar Singh- Dy. General Manager (MSPL) Mr. Charu Gupta-Manager (Deloitte) Mr. Puneet Sethi-Consultant (Deloitte)
Plant Operations	Mr. Ajeet Kumar Singh- Dy. General Manager (MSPL) Mr. Charu Gupta-Manager (Deloitte) Mr. Puneet Sethi-Consultant (Deloitte)
Monitoring and measuring system • Collection of measurements • Observations of established practices Data Verification of monitoring parameters	Mr. Ajeet Kumar Singh- Dy. General Manager (MSPL) Mr. Charu Gupta-Manager (Deloitte) Mr. Puneet Sethi-Consultant (Deloitte)
CDM monitoring and reporting documentation	Mr. Ajeet Kumar Singh- Dy. General Manager (MSPL) Mr. Charu Gupta-Manager (Deloitte) Mr. Puneet Sethi-Consultant (Deloitte)

Quality Assurance – Management and operating system	Mr. Ajeet Kumar Singh- Dy. General Manager (MSPL) Mr. Charu Gupta-Manager (Deloitte) Mr. Puneet Sethi-Consultant (Deloitte)
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3.5 Resolution of Any Material Discrepancy

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a Clarification Request (CL) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- II. the verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

FARs may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

Corrective Action Requests and Clarification Requests are detailed in Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Implementation status of the project activity

The project activity involves 9 WEGs of total capacity of 8.35 MW in GuddadarangavanaHalli, ChikkappaHalli and Gonur villages, Chitradurga District, Karnataka. The project generates electricity to be supplied to the Southern grid. During the verification a site visit was carried out. There are no non conformances observed during the site visit. There are no major changes in the key equipment since the validation of the project and from the last verification. The WEGs are connected to energy meters of 0.2 class accuracy which measure the electricity supplied to the grid by the project. The meters are calibrated by the KPTCL and are under their control. The project activity was found to be operational in accordance with the registered VCS PD. The project is running successfully and the parameters are being monitored as per the registered VCS PD.

The Share certificates^{/10/} are issued each month, which forms the basis for the calculation of emission reductions achieved by the project. No change of equipment is envisaged in the project activity. These facts have been verified during the site visit. All the supporting documents such as the commissioning

certificates^{/8/}, power purchase agreement^{/14/} and the share certificates^{/10/} for the monitoring equipment has been checked by the assessment team and are found to be correct.

Event	Date
The project activity implemented and commissioned commercially (Commissioning dates of WEGs)	Date of Commissioning is 21.03.2003 for 1 number of 950 KW WEG of MSPL Limited from KPTCL. Date of Commissioning is 30.09.2003 of 5x950 KW (4.75 MW) WEGs of MSPL Limited from KPTCL. Date of Commissioning is 30.09.2003 of 2x950 KW (1.9 MW) WEGs of RMML Limited from KPTCL. Date of Commissioning is 19.05.2004 of 1x750 KW (0.75 MW) WEG of RMML Limited from KPTCL
Project Registration under VCS 2007.1 ^{/1/}	VCS program Guideline 2007, published by VCSA on 18 th November 2008
Crediting period	10 years fixed Start date of crediting period from 01.04.2006 to 31.03.2016
First Monitoring Period	01-04-2006 to 31-03-2009 ^{/7/} (Verified & issued)
Second Monitoring Period	01/04/2009 to 30/09/2011 (Current – under verification)

The project activity is registered in version 13 of AMS.I.D^{/03/} methodology and monitoring report^{/5/} has mentioned same version of the methodology and is acceptable.

CL#01 was raised to submit the commissioning certificates of all the WEGs involved in the project activity to substantiate the start date of project activity. In response the PP has submitted commissioning certificates^{/8/} of all the WEGs. The same has been checked by the assessment team and found in line with the registered VCS-PD. Thus, CL#01 was closed

CL#02 was raised to submit the declaration to substantiate that, the project activity is not registered under any other GHG program. In response the PP has submitted the declaration^{/15/}. The same is checked by the assessment team and confirmed that the project activity is not registered under any other GHG program. Thus, CL#02 was closed

CL#03 was raised to submit the declaration[/] to substantiate that, the project activity is not rejected by any other GHG program. In response the PP has submitted the declaration^{/16/}. The same is checked by the

assessment team and confirmed that the project activity is not rejected by any other GHG program. Thus, CL#03 was closed.

CL#04 was raised to provide the power purchase agreement between the PP and BESCOM/KPTCL for the purchase of electricity from project activity. In response the PP has provided power purchase agreement^{/14/} for the project activity. The same is checked by the assessment team and confirmed that the generated electricity will be supplied to the southern regional grid of India. Thus, CL#04 was closed

CL#05 was raised to provide the O&M contract with Vestas. In response the PP has submitted the O&M^{/13/} between the PP and Vestas. The same is checked by the assessment team and found in line with the registered VCS-PD. Thus, CL#05 was closed.

CAR#07: It is observed that the actual average annual emission reductions are more than the estimated average annual emission reduction as mentioned in registered VCS PD^{/4/}. In response the PP clarified that this variation in generation is observed due to natural variation of Wind Profile year on year across the country. The actual increment observed for the entire monitoring period is 6.99 %. In the registered VCS PD^{/4/} +- 10 % variation are covered under sensitivity analysis which is higher than the 6.99%. Furthermore, the analysis carried out for peak and lean Wind periods in which 65 % of emission reductions are achieved in the period April to September and remaining 35% in the period Oct to March every year. After extrapolation for the year April 2011 to March 2012 and then calculating the emission reductions for one complete year, the actual emission reduction comes to 16790 units which is less than the estimated emission reductions in the PD. Additionally for the whole year, April 2011- March 2012 for the analysis, emission reductions will only 4.12% higher which was covered under the sensitivity analysis. All the analysis has been checked by the assessment team and it is found that all the increment in the generation was already covered under the sensitivity analysis, which is acceptable. Thus, CAR#07 was closed.

Remaining Issues from Previous Validation or Verification

This is the second periodic verification for the project activity. The project activity was registered under VCS 2007.1^{/6/} on 12/11/2009). No pending issues found from the validation^{/6/} and previous verification^{/7/}. This has been checked from the validation report^{/6/} and previous verification report^{/7/} and found correct.

Compliance of the monitoring plan with the monitoring methodology

The proposed project activity has applied the approved small scale methodology AMS.I.D version 13^{/3/} dated 14/12/2007. The version of the methodology was valid at the time of registration. There is no deviation from the applied methodology has been observed during the course of verification. The same has been checked with the validation report^{/6/} and previous verification report^{/7/} and found correct.

Implementation Status of the Monitoring Plan and Completeness of Monitoring

Monitoring of reductions in GHG emissions to result from the project has been implemented in accordance with the monitoring plan contained in the VCS PD^{/4/}. The monitoring mechanism is effective and reliable.

Parameter related to Baseline Emission calculation :

EGy (Net Electricity supplied to the grid by the WEGs): - There is only one monitoring parameter involved in the project activity which is EG_y (Net electricity supplied to the grid by the WECs). The same

has been presented in the registered VCS PD^{/4/}, which is in line with the methodology AMS.I.D Version 13^{/3/}. Net electricity supplied to grid has been calculated based on the measured values of “export” and “import” on the meter at the delivery point (at the project site), where joint meter reading is taken by the project proponent representative and BESCOM/KPTCL officials. The energy meter readings (export and import) are recorded each month in to joint meter reading issued by KPTCL/BESCOM^{/9/}. Transmission losses incurred during the transmission of electricity from the project site to the sub-station are taken in to account by the KPTCL/BESCOM in the share certificates^{/10/}. It also includes the electricity to be billed by the PP to the KPTCL/BESCOM, which is nothing but the net electricity supplied to the grid by project activity. Thus, the net electricity supplied to the grid by the project activity, after deduction of transmission losses is considered for the calculation of emission reductions. The share certificates^{/10/} were checked in respect to net electricity supplied to the grid. These forms are the basis for the emission reduction calculation of project activity.

The parameters electricity exported and electricity imported are measured by two-way tri-vector meters of accuracy class 0.2%, from which the reading are recorded in to the JMR^{/9/}. Transmission losses have been accounted by the BESCOM in share certificates^{/10/}, and hence not under influence of the PP. It also includes and the electricity to be billed by the PP to the KPTCL/BESCOM, which is nothing but the net electricity supplied to the grid by the project. Thus, the net electricity supplied to the grid by the project, after deducting the transmission losses is considered for the calculation of emission reductions. The values mentioned in the MR^{/5/} and the ER sheets^{/18/} are sourced from the Share certificates^{/10/} for each month of the monitoring period issued to the PP by the KPTCL/BESCOM. The verification team has verified the share certificates^{/10/}. The net electricity supplied to the grid for each month was found to consistent with the values mentioned in the share certificates^{/10/} of corresponding months. It is noteworthy that during the monitoring period, no discrepancy was found between the values reported in the MR and the share certificates^{/10/}. During the monitoring period, the energy meters are found to be working within the permissible limit of error of 0.2%.The periodic calibration of the energy meters have been carried out by the state grid authority. The meter details are as:

Metering Point (Meter ID / RR No.)	Main Meter Serial No.	Check Meter serial no.	Make	Type
GRHP-02	2260379	2307545	L & T, Class 0.2	Electronic tri vector ER300P
	9141531	5390231		
GRHP-03	2312419	02312420	ABB (Elster)& L & T, Class 0.2	Electronic tri vector ER300P
		9142239		
GRHP-04	2312418	2312417	ABB(Elster), Class 0.2	Electronic tri vector ER300P
GRHP-13	4186295	4186298	L & T, Class	Electronic

			0.2	tri vector ER300P
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It is noteworthy that the main meter (Serial No. 2260379) & check meter (Serial No. 2307545) for Metering point GRPH-02 are replaced by another set of new main meter (Serial No. 9141531) & check meter (Serial No. 5390231). Similarly for the metering point GRPH-03, the check meter (Serial No. 02312420) has been replaced by new check meter (Serial No. 9142239) during the current verification period. All the new set of meters were calibrated on the very same day when they replaced the old meters.

The photographs of the meters along with their serial numbers are displayed below -



Meter ID / RR No. GRHP-02	Meter ID / RR No. GRHP-02
Main Meter Serial Number-9141531	Check Meter Serial Number - 5390231



Meter ID / RR No. GRHP-03	Meter ID / RR No. GRHP-03
Main Meter Serial Number-2312419	Check Meter Serial Number - 9142239



Meter ID / RR No. GRHP-04	Meter ID / RR No. GRHP-04
Main Meter Serial Number-2312418	Check Meter Serial Number 2312417



Meter ID / RR No. GRHP-13	Meter ID / RR No. GRHP-13
Main Meter Serial Number-4186295	Check Meter Serial Number - 4186298

The project activity satisfies all criteria of the applicable methodology and is in line with the power purchase agreement between^{14/} the PP and the KPTCL and registered VCS PD^{4/}. The same is checked by the assessment team and found correct. However, some findings were raised during the course of verification as mentioned below.

CL#08: the monthly electricity generation report prepared by the Vestas covering the entire monitoring period needs to be submitted. In response the PP has submitted the monthly electricity generation report covering entire monitoring period. The same is checked by the assessment team and found correct. Thus, CL#08 was closed

CL#09: Share certificates and Form B prepared by BESCO to calculate the transmission losses and electricity supplied to the grid by project activity needs to be submitted. In response the PP has submitted the share certificates^{/10/} and Form B covering the entire monitoring period. Same is checked by the assessment team and found correct. Thus, CL#09 was closed.

Accuracy of Equipment

There is only one monitoring parameter considered in the monitoring plan as per the registered VCS-PD^{/4/} which is net electricity supplied to the grid, the net electricity supplied to the grid is calculated from the electricity exported and electricity imported. The electricity exported and electricity imported is measured through the tri-vector energy meter installed at substation. The accuracy class of the energy meter is 0.2 %. As per the registered VCS PD^{/4/} the energy meters installed for the electricity imported and electricity exported is calibrated once in a year. There are total four metering locations involved in the project activity, four numbers of main meter and check meter involved in the project activity.

The calibration details of the monitoring equipments i.e. energy meters as verified are mentioned below -

Meter ID / RR No. GRHP-02					
Main Meter Serial Number-2260379					
Previous calibration date		Current Calibration Date		Calibration Validity	
02/07/2008		03/05/2009		03/05/2010	
Main Meter Serial Number-9141531 (replaced the earlier main meter)					
Current Calibration Date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
06/07/2009	23/10/2009	31/12/2009	29/11/2010	11/02/2011	11/02/2012
Check Meter Serial Number-2307545					
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Date	Calibration	Calibration Validity
02/07/2008	03/05/2009	06/07/2009	23/10/2009		23/10/2010
Check Meter Serial Number-5390231 (replaced the earlier check meter)					
Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity		
31/12/2009	29/11/2010	11/02/2011	11/02/2012		

Meter ID / RR No. GRHP-03					
Main Meter Serial Number-2312419					
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
02/07/2008	15/05/2009	21/07/2010	12/11/2010	07/02/2011	07/02/2012
Check Meter Serial Number-02312420					
Previous calibration date		Current Calibration Date		Current Calibration Date	Calibration Validity
02/07/2008		15/05/2009		21/07/2010	21/07/2011
Check Meter Serial Number-09142239(replaced the earlier check meter)					

Current Calibration Date	Current Calibration Date	Calibration Validity
12/11/2010	07/02/2011	07/02/2012

Meter ID / RR No. GRHP-04				
Main Meter Serial Number-2312418				
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
02/07/2008	15/05/2009	21/07/2010	11/02/2011	11/02/2012
Check Meter Serial Number-2312417				
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
02/07/2008	15/05/2009	21/07/2010	11/02/2011	11/02/2012

Meter ID / RR No. GRHP-13				
Main Meter Serial Number-4186295				
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
02/07/2008	21/04/2009	24/07/2010	08/02/2011	08/02/2012
Check Meter Serial Number-4186298				
Previous calibration date	Current Calibration Date	Current Calibration Date	Current Calibration Date	Calibration Validity
02/07/2008	21/04/2009	24/07/2010	08/02/2011	08/02/2012

There was a delay in calibration observed for the 3 energy meters. Details are provided in the table below -

Meter ID / RR No.	Delay in Calibration frequency	Calibration due date (one year after previous calibration)	Actual Calibration date	Calibration Gap	Adjustment of maximum permissible error applied for the months -because of Calibration Gap
GRHP-03	3 rd Calibration	15/05/2010	21/07/2010	67	May 2010

					June 2010 July 2010
GRHP-04	3 rd Calibration	15/05/2010	21/07/2010	67	May 2010 June 2010 July 2010
GRHP-13	3 rd Calibration	21/04/2010	24/07/2010	94	April 2010 May 2010 June 2010 July 2010

The PP has adopted the approach outline by UNFCCC for CDM project activities under EB 52 Annex 60: "Guidelines for Assessing Compliance with the Calibration Frequency Requirements"^{19/} to deal with the delay in the calibration period for the meters. It is noteworthy that the delayed calibration test reports for all the energy meters do not show any error that is more than the maximum possible error of 0.2% (as per the manufacturer specification as depicted in the meter consol which shows that the meters are of 0.2 class accuracy and thus, the maximum permissible error in the meter is accepted as 0.2%) which has been duly verified by the assessment team. The maximum permissible error of the instrument, 0.2% has been applied to the measured values and the transmission losses for the months where no calibration was done. The measured values identified in the project activity are Electricity exported from the project activity and Electricity imported by the project activity. The measured values of electricity exported have been decreased by 0.2%. The transmission losses and electricity imported have been increased by 0.2%. These adjusted values have been used to calculate the Net electricity supplied to grid.

As per the registered VCS-PD^{4/}, the calibration of main meters and check meter has been carried out once in a year for the entire monitoring plan. Further, according to the registered VCS PD^{4/}, the main and check meters shall be tested for accuracy every calendar year with reference to a portable standard meter. The meters shall be deemed to be working satisfactorily if the errors are within specifications for meters of 0.2% accuracy class. The data registered by the main meter alone will be adopted for the purpose of calculation as long as the error in the main meter is within permissible limits. If during the annual accuracy tests, the main meter is found to be within the permissible limit of error and the corresponding check meter is beyond the limits, the main meter reading shall be considered as usual. However, the check meter shall be calibrated immediately. If the main meter is found to be beyond the permissible limits of error, but corresponding check meter is within limits, then the check meter reading shall be adopted for that period. The main meter shall be calibrated immediately. However, during the course of verification it was observed that main meter for MSPL 0.95 MW was replaced once during the monitoring period and check meter for MSPL 0.95 MW, MSPL 4.75 MW were replaced once during monitoring period. The PP is requested to provide the certificate of replacement^{12/} of meter. CAR#10 was raised in this regard. In response the PP has submitted All the meter replacement details are mentioned clearly in the calibration certificates^{12/} and the same is checked by the assessment team and found correct. Thus, CAR#10 was closed.

CAR#11 was raised to provide the calibration certificates of the entire meter involved in the project activity. In response the PP has submitted the calibration certificates^{/12/} for all the meters covering the entire monitoring plan. Same is checked by the assessment team and delay in calibration observed as mentioned below.

1. Second calibration of main and check meters for MSPL (4.75 MW) was carried out on 15/05/2009 and due date for next calibration was 15/05/2010 while the third calibration was done on 21/07/2010. Thus, total 67 days delay observed
2. Second calibration of main and check meters for MSPL RMMPL (1.9MW) was carried out on 15/05/2009 and due date for next calibration was 15/05/2010 while the third calibration was done on 21/07/2010. Thus, total 67 days delay observed
3. Second calibration of main and check meters for MSPL RMMPL (0.75MW) was carried out on 21/04/2009 and due date for next calibration was 21/04/2010 while the third calibration was done on 24/07/2010. Thus, total 94 days delay observed.

In response the PP has applied the maximum error correction factor in the delayed period and MR^{/5/} and ER sheet^{/18/} have been revised accordingly. Same is checked by the assessment team and found in line with the requirement of EB 52 Annex 60^{/19/}. The total emission reductions for the monitoring period have been come down at 47,297 tCO₂ which is checked by the assessment team and found acceptable. Thus, CAR#11 was closed.

Data from External Sources

Project activity considered the grid emission factor from the CEA database version 4. It was fixed ex ante in the registered VCS PD^{/4/}. The version 4 of the CEA database was valid at the time of registration. The value of the grid emission factor to calculate the emission reduction is considered 0.9269 tCO₂/MWh. Same has been checked by the assessment team with registered VCS PD^{/4/} & CEA database version 04 and found that it is correctly applied for the calculation of emission reduction.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

In the project activity the monitored data and parameters are monitored inline to the registered VCS PD and the consistent use of data and parameters is inline to monitoring plan. The net electricity supplied to the grid is calculated as the difference between the total electricity exported and total electricity imported, transmission losses have been suitably subtracted as given in the share certificates^{/10/}. The product of grid emission factor and net electricity supplied to the grid gives the baseline emission reduction for the project activity. For the calculation of baseline emissions the ex-ante validated value of the baseline parameter i.e. Grid emission factor for southern regional grid from the CEA data base version 4 have been considered and the monitoring data to calculate the emission reduction is taken from the share certificate issued^{/10/} by the KPTCL/BESCOM. This data is the basis for the calculation of emission reductions as given in the spread sheet and the spreadsheet has been checked and found to be satisfactory. All the calculation used for the emission reductions including the emission factor have been checked by the assessment team and found in line with the approved methodology^{/3/} and registered VCS PD^{/4/}.

Calculation of Emission Reductions or Removals

Parameter	Reported Value	Verified Value
Net Electricity Supplied to the Grid	51,041,526 kWh	51,028,770 kWh
Combined margin CO ₂ emission factor for the proposed project activity	0.93 (tCO ₂ /MWh)	0.9269 (tCO ₂ /MWh)
Project Emission	0	0
Leakage Emission	0	0
Baseline emission	47,469 tCO ₂	47,297 tCO ₂

The net electricity supplied to the grid is calculated as the difference between total electricity exported and electricity imported, transmission losses have been suitably subtracted as given in the share certificates^{/10/}. Baseline emission is the product of grid emission factor and net electricity supplied to the grid. The baseline emission is calculated based on the ex-ante validated value i.e. southern regional grid emission factor. The monitoring data to calculate the emission reduction for monitoring plan is taken from the share certificates^{/10/} issued by KPTCL/BESCOM. The calculation for the emission reduction is checked and found in line with the approved methodology^{/3/}. The grid emission factor of 0.9269 tCO₂/MW for the southern regional grid has been applied correctly.

The formula used for the determination of baseline emission which is consistent with the PDD:

$$BE_y = EF_y \times E_{Gy}$$

Where

BE_y = Baseline emission

E_{Gy} is the net electricity supplied to the grid in a given year (kWh)

EF_y is the emission factor of southern regional grid in tCO₂/MW

Project Emission (PE_y): as the project activity is renewable energy generation by Wind technology. Thus, Project emission is considered as zero.

Leakage Emission (LE_y): as the project activity was green field project activity and no equipment was transferred from another project activity. Thus, leakage emission for the project activity was considered as zero which is in line with the methodology

Thus emission reductions from the project activity are calculated as:

$$\text{Emission Reductions (y)} = BE_y - PE_y - LE_y$$

where

PE_y = zero

LE_y = Zero

and BE_y = E_{Gy} × EF_{BL}.

Net electricity supplied to the grid (E_{Gy}) for the period from 01 April 2009 to 30 September 2011 is 51,028,770 kWh.

Accordingly:

Emission Reduction (ER_y) calculation for the period from **01 April 2009 to 30 September 2011**:

$$ER_{01 \text{ April } 2009 - 30 \text{ September } 2011} = BE_y - EF_y \times E_{Gy}$$

$$\begin{aligned}
 &= 51,028,770 \text{ (kWh)} \times 0.9269 \text{ (tCO}_2\text{/MWh)} \\
 &= 51,028,770/1000 \text{ (MWh)} \times 0.9269 \text{ (tCO}_2\text{/MWh)} \\
 &= \quad \quad \quad \mathbf{47,297 \text{ tCO}_2}
 \end{aligned}$$

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Proper data management including data acquisition, aggregation and data management system is being followed for the project activity. All records required for monitoring are archived in line with the requirement of the validated monitoring plan^{/4/}. No significant lack of evidence and missing data were deducted on site verification. The net electricity supplied to the grid is taken from the share certificates^{/10/} given by the KPTCL/BESCOM for the payment made for the electricity to be billed. As Vestas wind technology is an ISO^{/17/} 9001 certified company, QMS procedure are already in place. All internal data are subjected to QA/QC measures. All monitoring data are archived electronically. These were verified during the site visit and it has been found that the appropriate procedures were adopted for data handling. Supporting documents such as share certificate^{/10/}, JMRs^{/9/}, calibration certificates^{/12/} and invoices were checked by the assessment team and found correct.

4.4 Management and Operational System

The responsibility is documented in a written form and followed as explained under registered VCS PD^{/4/} and monitoring report. The procedure for the data archiving is documented. The person responsible for operation and maintenance are trained as found on site visit. Representatives from the O&M^{/13/} team were interviewed. Procedure for training and maintenance of critical equipments were discussed during site visit. Day to day operation is supervised by the technically qualified site engineers. A combination of competent personnel and on the job training is the procedure practiced for all monitoring personnel. This ensures that competent people carry out tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification. Furthermore, Vestas wind technology is an ISO 9001 certified company with predefined QMS in place, the management and operation, handling & storage of data and training of monitoring personal. The same has been verified by the assessment team during the site visit.

However, during the course of verification CL#06 was raised to provide the ISO^{/17/} certificates to substantiate the QA/QC procedure of monitoring. In response the PP has submitted the site specific ISO^{/17/} certificate. The same is checked by the assessment team and found that the certificates were site specific and valid for the monitoring period. Thus, CL#06 was closed.

5 VERIFICATION CONCLUSION

The scope of the verification

We, SGS have been engaged by MSPL Limited to certify that the greenhouse gas (GHG) emission reductions reported for the 8.35 MW wind power project at Guddarangavana Halli, District Chitradurga, State Karnataka in India for the period from 01/04/2009 to 30/09/2011 in the verification report and the monitoring report version 04 dated 18/04/2012 are eligible for registration as Voluntary Carbon Units.

This engagement covers the verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the 8.35 MW wind power project at Guddarangavana Halli, District Chitradurga, State Karnataka in India, as well as an additional confirmation of the compliance of the VCS PD with the requirements of VCS Standard version 3.1.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the defined reporting period.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

Conclusions of the verification

(a) SGS is an entity accredited by the United Nations Framework Convention on Climate Change (UNFCCC) to undertake certification and verification services in the sector in which the Project is undertaken. The accreditation is accepted by VCSA as indicated in Clause 5 of VCS Program Guide Version 3.2.

(b) The monitoring report, together with other information examined, was prepared as per the VCS Monitoring Report Template, Version 3.0.

(c) The information in the monitoring report together with other information examined by the assessment team, including all the information necessary to determine that the emission reductions achieved have been determined correctly.

(d) Based on the examination of the monitoring report and other relevant information, the project meets all the requirements of the VCS Standard Version 3.2.

(e) Based on our examination of the monitoring report and other relevant information, the claiming emission reductions during the monitoring period from 01/04/2009 to 30/09/2011 are verified as 47,297 tonnes CO₂ equivalent.

Liability statement with regards to the accuracy of the verification statement

The management of MSPL Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions. SGS is responsible for verification and confirming emission estimates for the project, as described in the monitoring report.

Our certification approach draws on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes an assessment of evidence, through desk review, and where necessary, interviews, stakeholder discussions and site visits, relevant to certifying the rightfulness of the amounts and disclosures in relation to the Project's GHG emission reductions.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the monitoring report, are fairly stated.

This assessment included:

- Collection of evidence supporting the reported data;
- Checking whether the provisions of the Monitoring Plan in the registered PDD, were consistently and appropriately applied;
- Site visit and interview of relevant staff.

We have verified whether the information included in the monitoring report representing the emission reductions achieved has been determined correctly for the given period from the baseline figure.

Certification statements

Based on process and procedures conducted, in our opinion, the monitoring report version 04 dated 18/04/2012 on emission reductions for 8.35 MW wind power project at Guddarangavana Halli, District

Chitradurga, State Karnataka in India during the reporting period from 01/04/2009 to 30/09/2011 is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. All relevant facts have been found correct by our examination. The GHG emission reductions calculation is correct.

Therefore, SGS is able to certify that the project is in full compliance with the VCS Standard Version 3.1, and the quantity of the reported emission reductions during below reporting period are completely, comparably, accurately and correctly reported.

(1) Reporting period: From 01/04/2009 to 30/09/2011

Verified GHG emission reductions or removals in the above reporting period:

Parameters	1/04/2009 to 31/12/2009	1/1/2010 to 31/12/2010	1/1/2011 to 30/09/2011	Total
Net electricity supplied to the Grid (kWh)	18,070,847	17,893,324	15,064,599	51,028,770
Baseline Emission Factor (tCO ₂ /MWh)	0.9269	0.9269	0.9269	0.9269
Emission Reductions (tCO _{2e})	16,749	16,585	13,963	47,297

Statement of Confidentiality

SGS will hold all information confidential until the client instructs otherwise or until it has been released in accordance with the VCS Standard Version 3.2 requirements.

Signed on behalf of the Verification Body by Authorized Signatory

SGS United Kingdom Limited

Dated: 30/05/2012

Dated: 30/05/2012



Signature:



Signature:

Lead Assessor

Nayan Jyoti Deka

Technical Reviewer

Ramkrishna Patil

Annex 1: Document References

/1/	Document VCS 2007.1 published by VCSA on 18 th November 2008
/2/	Document VCS 3.1
/3/	Monitoring methodology AMS.I.D version 13
/4/	VCS PD version 04 dated 10/11/2011
/5/	• MR version 01 dated 20/12/2011 • MR version 02 dated 06/02/2012 • MR version 03 dated 14/02/2012 • MR version 04, dated – 18/04/2012(Final)
/6/	Final Validation Report dated 12/11/2009
/7/	Final Verification Report (First monitoring period) dated 25/08/2011
/8/	Commissioning certificates of all the WEGs involved in project activity
/9/	JMR (Form B) sheets for the period of 01/04/2009 to 30/09/2011
/10/	Share certificate issued by KPTCL/BESCOM converging entire monitoring period
/11/	Invoice raised for the net electricity supplied to the grid by PP for the period of 01/04/2009 to 31/09/2011
/12/	Calibration certificates of all the meters involved in the project activity for the period of 01/04/2009 to 31/09/2011
/13/	O&M contract documents between PP and Vestas RRB India Limited
/14/	Power Purchase Agreement between PP and KPTCL
/15/	Declaration to substantiate that the project activity is not register under any other GHG programme
/16/	Declaration to substantiate that the project activity is not rejected by any other GHG programme
/17/	ISO certificate to substantiate the QA/QC of monitoring
/18/	Emission Reduction calculation sheet
/19/	EB 52 Annex 60

Annex 2: Overview of Findings

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	3	8	0

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	01	Reference:	UK.AU4/MR
Lead Assessor Comment:					
PP is requested to provide the commissioning certificates of all the WEGs involved in the project activity to substantiate the start date of project activity.					
Project Participant Response:				Date: 06/02/2012	
All the commissioning certificates are being provided to verifier.					
Documentation Provided by Project Participant:					
Commissioning certificates are provided as Annexure 1 with the email.					
Information Verified by Lead Assessor:					
Commissioning certificates have been checked					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	
Commissioning certificates of all the WEGs involved in the project activity involved in the project activity. The capacity of the WEGs, date of commissioning, locations and unique umber of the WEGs have been verified by the assessment team and found in line with the registered VCS PD and MR. Thus, CL#01 was closed.					
Acceptance and Close out by Lead Assessor:				Date: 13/02/2012	

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	02	Reference:	UK.AU4/MR
Lead Assessor Comment:					
PP is requested to provide the declaration to substantiate that the project is not registered under any other GHG program.					
Project Participant Response:				Date: 06/02/2012	
The declaration is provided is being provided to verifier					
Documentation Provided by Project Participant:					
Declaration is provided as Annexure 2 with the email.					
Information Verified by Lead Assessor:					
Declaration provided by the PP.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	

The declaration provided by the PP dated 28/11/2008 clearly states that, the proposed project activity registered under VCS 2007.1 standard and any other form of environmental credits are not generated by the project activity. Thus, CL#02 was closed.

Acceptance and Close out by Lead Assessor: **Date:** 13/02/2012

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	03	Reference:	UK.AU4/MR
Lead Assessor Comment:					
PP is requested to provide declaration to substantiate that the project activity is not rejected by any other GHG program.					
Project Participant Response:				Date: 06/02/2012	
The declaration is provided is being provided to verifier					
Documentation Provided by Project Participant:					
Declaration is provided as Annexure 2 with the email.					
Information Verified by Lead Assessor:					
Declaration provided by the PP.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	
The declaration provided by the PP dated 28/11/2008 clearly states that, the proposed project activity is not rejected by any other GHG programme. It is checked by the assessment team and found in compliance with the VCS standard. Thus, CL#03 was closed.					
Acceptance and Close out by Lead Assessor:				Date: 13/02/2012	

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	04	Reference:	UK.AU4/MR
Lead Assessor Comment:					
PP is requested to provide the power purchase agreement between PP and BESCOM/KPTCL for purchase of generated electricity from project activity.					
Project Participant Response:				Date: 06/02/2012	
The documents are being provided to verifier					
Documentation Provided by Project Participant:					
Power purchase agreement is provided as Annexure 3 with the email.					
Information Verified by Lead Assessor:					
Power purchase agreement for the project activity is checked					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	

Power purchase agreement between Karnataka Power Transmission corporation limited and MSPL dated	
1.	07/08/2003 for 0.95 MW
2.	11/03/2004 for 1.9 MW
3.	18/03/2004 for 0.75 MW
4.	11/02/2004 for 4.75 MW
And found that the generated electricity from the project activity is being supplied to southern regional grid of India. All the information provided in the MR is in compliance with the registered VCS PD and PPA for project activity. Thus, CL#04 was closed	
Acceptance and Close out by Lead Assessor:	Date: 13/02/2012

Date:	18/01/2012		Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	05		Reference:	UK.AU4/MR
Lead Assessor Comment:						
PP is requested to provide the evidence for O&M contract for operation maintenance and monitoring of project activity with BESCOM.						
Project Participant Response:					Date: 06/02/2012	
The only contract the PP has with BSCOM is PPA and that is provided as Annexure 3 with the email.						
Documentation Provided by Project Participant:						
Power purchase agreement is provided as Annexure 3 with the email.						
Information Verified by Lead Assessor:						
Power purchase agreement for the project activity is checked						
Reasoning for not Acceptance or Acceptance and Close Out:					Date: 13/02/2012	
The equipment supplier (Vestas) is the contactor for operation and maintenance of project activity. Only the generated electricity from the project activity is supplied to the BESCOM under the power purchase agreement. Same is checked by the assessment team and found acceptable. Thus, CL#05 was closed.						
Acceptance and Close out by Lead Assessor:					Date: 13/02/2012	

Date:	18/01/2012		Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	06		Reference:	UK.AU4/MR
Lead Assessor Comment:						
PP is requested to provide the ISO certificates of Vestas to substantiate the QA/QC procedure of monitoring.						
Project Participant Response:				Date: 06/02/2012		
The documents are being provided to verifier						
Documentation Provided by Project Participant:						
ISO certificates of Vestas is provided as Annexure 4 with the email						
Information Verified by Lead Assessor:						
ISO certificates issued to Vestas have been checked.						

Reasoning for not Acceptance or Acceptance and Close Out:	Date: 13/02/2012
The ISO certificates issued to Vestas for Sales, Installation, commissioning. Maintenance, training and service of Wind Energy Systems have been checked by the assessment team. Details of certificates as mentioned below. 1. ISO 9001:2008 certificate valid from 11/09/2010 to 10/09/2013 2. BS OHSAS 18001:2007 certificate valid form 11/09/2010 to 10/09/2013 3. ISO 14001:2004 dated 25/08/2010 and will be valid till 01/08/2012 All the certificates are covering the monitoring period. Thus, it is acceptable and CL#06 was closed.	
Acceptance and Close out by Lead Assessor:	Date: 13/02/2012

Date:	18/01/2012		Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur	
Type:	CAR	Number:	07	Reference:	UK.AU4/MR

Lead Assessor Comment:

It is observed that the actual average annual emission reductions are more than the estimated average annual emission reduction as mentioned in registered VCS PD. Clarification is requested in this regard.

Project Participant Response:

Date: 06/02/2012

Analysis of generation data and emission reductions for two full years from April 09- March 2011 has been carried out. The result of the analysis is that the actual emission reductions are only 6.99 % higher than the estimated emission reductions. The Power Generation from a Wind Turbine depends upon the wind profile of the location. Due to natural variation of Wind Profile year on year across the country the actual annual average emission reductions may vary as compared to the estimated annual average emission reduction mentioned in registered VCS PD. However, variation of up to +/- 10% was considered under sensitivity analysis in the PD and the variation in the emission reductions of last two years is even less than that was considered under sensitivity.

Table 1

Period	Actual Emission Reductions	Estimated Emission reductions	Percentage Increase
April 09- March 11	36,523	34,136	6.99%
Total (2 Year)			

Further, we analyzed the emission reductions in terms of peak and lean Wind periods in which 65 % of emission reductions are achieved in the period April to September and remaining 35% in the period Oct to March every year.

Table 2

	CER	Share %
Peak Periods		
April 09- Sep 09 and April 10- Sep 10	23,809	65%
Lean Periods		35%

Oct 09- to Mar 10 and Oct 10- March 11	12,714	
Total	36,523	100%

On extrapolating the data for the year April 2011 to March 2012 and then calculating the emission reductions for one complete year, the actual emission reduction comes to 16790 units which is less than the estimated emission reductions in the PD.

Table 3

Peak Period April 11 to Sep 11	10,945	Actual
Lean Period Oct 11 to Mar 2012	5,845	Estimated (35% for the year)
Total	16,790	Less than PD volume of 17068

However, considering the whole year, April 2011- March 2012 for the analysis, emission reductions will only 4.12% higher, well within the sensitivity figure of +/- 10%.

Table 4

Period	Actual	Estimated as per PD	% variation
Apr 09 to Mar 11 Total (2 Year)	36,523	34,136	6.99%
Apr 11 to Mar 12*	16,790	17,068	-1.63%
Apr 09 to Mar 12 Total (3 Year)*	53,313	51,204	4.12%

* Includes estimated for the lean period Oct 11 to Mar 12

Documentation Provided by Project Participant:

Analysis is based on emission reduction data and therefore no documentation need arises.

Information Verified by Lead Assessor:

The analysis based on emission reduction data is checked.

Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 13/02/2012

The actual emission reduction is higher than estimated emission reductions as in VCS PD. This variation in generation is observed due to natural variation of Wind Profile year on year across the country. The actual increment observed for the entire monitoring period is 6.99 %. In the registered VCS PD $\pm 10\%$ variation are covered under sensitivity analysis which is higher than the 6.99%. Furthermore, analysis carried out for peak and lean Wind periods in which 65 % of emission reductions are achieved in the period April to September and remaining 35% in the period Oct to March every year. After extrapolation for the year April 2011 to March 2012 and then calculating the emission reductions for one complete year, the actual emission reduction comes to 16790 units which is less than the estimated emission reductions in the PD. Additionally for the whole year, April 2011- March 2012 for the analysis, emission reductions will only 4.12% higher which was covered under the sensitivity analysis. All the analysis has been checked by the assessment team and found that all the increment in the generation was already covered under the sensitivity analysis, which is acceptable. Thus, CAR#07 was closed.

Acceptance and Close out by Lead Assessor:	Date: 13/02/2012
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Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	08	Reference:	UK.AU4/MR
Lead Assessor Comment:					
PP is requested to provide the monthly electricity generation report prepared by Vestas for monitoring of electricity generated by project activity.					
Project Participant Response:				Date: 06/02/2012	
The documents are provided to DOE					
Documentation Provided by Project Participant:					
Monthly electricity generation report prepared by Vestas is provided as Annexure 5 with the email					
Information Verified by Lead Assessor:					
Monthly electricity generation report for the WEG covering entire monitoring period.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	
Monthly electricity generation report prepared by Vestas to check the performance of WEGs for entire monitoring period are checked by the assessment and found correct. Thus, CL#08 was closed					
Acceptance and Close out by Lead Assessor:				Date: 13/02/2012	

Date:	18/01/2012		Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CL	Number:	09		Reference:	UK.AU4/MR
Lead Assessor Comment:						
Share certificates and Form B prepared by BESCO to calculate the transmission losses and electricity supplied to the grid by project activity needs to be submitted.						
Project Participant Response:				Date: 06/02/2012		
The documents are provided to DOE						
Documentation Provided by Project Participant:						
Form B prepared by BESCO is provided as Annexure 6 with the email						
Information Verified by Lead Assessor:						

Form B prepared by BESCO is checked	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 13/02/2012
Form B prepared by the BESCO covering entire monitoring period have been checked by the assessment team. All the values electricity export, electricity import, transmission loss and net electricity supplied to the grid are sourced from the Form B. All values of emission reduction calculation sheet are checked with the Form B and no discrepancies found. Thus, CL#09 was closed.	
Acceptance and Close out by Lead Assessor:	Date: 13/02/2012

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CAR	Number:	10	Reference:	UK.AU4/MR
Lead Assessor Comment:					
It was observed that, main meter for MSPL 0.95 MW was replaced once during the monitoring period and check meter for MSPL 0.95 MW, MSPL 4.75 were replaced once during monitoring period. PP is requested to provide the certificate of replacement of meter.					
Project Participant Response:				Date: 06/02/2012	
The Documents are being provided to Verifier.					
Documentation Provided by Project Participant:					
The certificate of replacement of meter is included in the calibration certificates of document and the same is provided as Annexure 7 with the email.					
Information Verified by Lead Assessor:					
The calibration certificates for the meters are checked. Both the meters (for MSPL 0.95 MW) are rated and error was found within the permissible limit of 0.2%. However, error in recording energy between main meter & check meter found. Hence, it was recommended to replace both the meters as per the calibration certificate dated 03/05/2009; consequently the main meter was replaced. It was found in calibration dated 23/10/2009 that, 45 minutes variation in recording time between main and check meter observed, consequently check meter was also replaced. Furthermore, it was observed in calibration dated 21/07/2010 MSPL (4.75 MW) that both the main meter are rated and main meter reading is within the permissible limit 0.2 %, check meter error is above 0.2 %. Hence, it was recommended to replace the check meter and consequently the same was replaced. All the meter replacement details are mentioned clearly in the calibration certificates and the same is checked by the assessment team and found correct.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	

Furthermore, some editorial changes are required in the MR and excel sheet as mentioned below:

1. Please clarify if this GuddarangavanaHalli, is single word or two words are combined.
2. It is not mentioned that which is latitude and which is longitude in section 1.7 of the MR
3. The grid name and abbreviation for emission factor, version of CEA data base and values of emission factors are not consistent with VCS PD. Please check section 3.1 of MR for consistent information. The round down of emission factor is not appropriate
4. Excel Spreadsheet: The column "Calender Year Wise Emission Reductions" in excel sheet is not appropriate as column consists the values of net electricity and not emission reductions. Please clarify why column H,R, AC are typed values , header mentioned Net Electricity Export (kWh) - Rounded figure used for invoicing, however rounding is not done in excel spreadsheet. Also clarify why columns I,S, AD is not linked with previous column
5. Please clarify why this section 5 of MR has been kept as blank, if not applicable, pls mention accordingly
6. Please clarify why MR does not mention vintage wise emission reductions and also VCS registry expects vintage wise emission reductions

CAR#10 is OPEN

Project Participant Response:	Date: 18/04/2012
1) The world Guddarangavana Halli has now been updated in the title of MR as per the VCS PD. 2) Latitude and Longitude are now mentioned in the section 1.7 of MR. 3) The grid name, abbreviation for Emission factor, CEA database version, and emission factor value have been updated in the MR. 4) The column "Calender Year Wise Emission Reductions" has been updated as "Calendar year wise electricity exported". Values in column G are calculated by a formula. The values in column H are typed from the BESCOM invoices and can be calculated by the same formula as applied in column G. The values in column G and H are same at most of the places however some values are different because of the rounding off procedure followed by BESCOM. As per the monitoring plan we need to consider the values of invoices for calculating emission reductions. Accordingly the values in column H (typed from BESOCM Invoices) are considered for emission reductions. Same applies for column Q & R, AB & AC, AM & AN 5) The same has been updated in the MR 6) Vintage wise emission reductions are now mentioned in the Section 4.4 of MR.	
Documentation Provided by Project Participant:	
Revised Emission Reduction calculation sheet and revised MR	
Information Verified by Lead Assessor:	
Revised Emission Reduction calculation sheet and revised MR version 04	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 19/04/2012

1. GuddarangavanaHalli is the single word; same has been corrected in revised MR Version 04. It as been checked by the assessment team and found in line with the registered VCS PD. CLOSED 2. Latitude and longitude have been included in the section 1.7 of the revised MR Version 04, it has been checked by the assessment team and found acceptable. CLOSED. 3. The grid names, abbreviation for Emission factor, CEA database version, and emission factor value have been updated in the revised MR Version 04. It has been checked by the assessment team and found in line with the registered VCS PD. CLOSED 4. The emission reduction sheet is revised accordingly. It has been checked by the assessment team and total emission reductions have been come down to 47,297 tCO₂.CLOSED 5. The correction has been made accordingly. Checked and found correct. CLOSED 6. The vintage wise emission reductions are included in the revised MR Version 04 and emission reduction calculation sheet. It has been checked by the assessment team and found correct. CLOSED	
Acceptance and Close out by Lead Assessor:	Date: 19/04/2012

Date:	18/01/2012	Raised by:	Mr. Nayan Jyoti Deka/Ajay Singh Thakur		
Type:	CAR	Number:	11	Reference:	UK.AU4/MR
Lead Assessor Comment:					
Calibration certificates for main meter and check meter installed for electricity measurement need to be submitted. Moreover, the calibration details in the MR are inadequate, not reflecting the previous, current & next due of the calibrations of the meters.					
Project Participant Response:				Date: 06/02/2012	
Calibration details in MR have been updated showing the previous, current, and next due date of calibration of meter. The calibration details have been updated in PD and Emission reduction calculation sheet.					
Documentation Provided by Project Participant:					
Calibration certificates are provided as Annexure 7 with the email.					
Information Verified by Lead Assessor:					
Calibration certificates of all the meters involved in the project activity.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 13/02/2012	

The calibration details have been incorporated in the revised MR showing the previous, current, and next due date of calibration of meter as per the calibration certificate available. It has been checked by the assessment team and found correct.

Further, as per the registered VCS PD, calibration of energy meter shall be carried annually. However it was observed that

4. Second calibration of main and check meters for MSPL (4.75 MW) was carried out on 15/05/2009 and due date for next calibration was 15/05/2010 while the third calibration was done on 21/07/2010. Thus, total 67 days delay observed
5. Second calibration of main and check meters for MSPL RMMPL (1.9MW) was carried out on 15/05/2009 and due date for next calibration was 15/05/2010 while the third calibration was done on 21/07/2010. Thus, total 67 days delay observed
6. Second calibration of main and check meters for MSPL RMMPL (0.75MW) was carried out on 21/04/2009 and due date for next calibration was 21/04/2010 while the third calibration was done on 24/07/2010. Thus, total 94 days delay observed.

Thus, as per the EB 52 Annex 60 of UNFCCC, maximum permissible error of the meters shall be applied to the measured value for period between the scheduled date of calibration and the actual date of calibration. Correction is required in this regard. CAR is Open

Project Participant Response:

Date: 15/02/2012

There were some calibration gaps identified in the calibration schedule. The gaps in calibration schedule and the period for which adjustments are made is mentioned in the table below:

Meter ID / RR No.	Name of Investor and Capacity (MW)	Delay in Calibration frequency	Due Date	Actual Calibration Done	Calibration Gap	Adjustment of maximum permissible error applied for the months - because of Calibration Gap
GRHP-03	MSPL (4.75 MW)	3 rd Calibration	15/05/2010	21/07/2010	67	May 2010 June 2010 July 2010
GRHP-04	RMMPL (1.9MW)	3 rd Calibration	15/05/2010	21/07/2010	67	May 2010 June 2010 July 2010
GRHP-13	RMMPL (0.75MW)	3 rd Calibration	21/04/2010	24/07/2010	94	April 2010 May 2010 June 2010 July 2010

For the above said months the maximum permissible error of the meters has been applied to the measured value for period between the scheduled date of calibration and the actual date of calibration.

The emission reduction calculation has been revised in the Monitoring report accordingly.

Documentation Provided by Project Participant:	
Revised emission reduction calculation sheet and revised MR	
Information Verified by Lead Assessor:	
Revised emission reduction calculation sheet and revised MR	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 19/02/2012
The revised ER sheet and MR have been checked by the assessment team and found that the error correction factor for the period of delayed calibration have been applied correctly as per the EB 52 Annex 60 of UNFCCC. After the correction factor the total emission reductions for the monitoring period have been come down at 47457 tCO₂. However, as transmission losses are calculated by using export values of same meter and if that meter have delay in calibration, then why the same is not applicable for transmission losses conservatively. CAR#11 is OPEN.	
Project Participant Response:	Date: 18/04/2012
Delay in calibration has now been applied to Transmission losses and the emission reductions has been calculated accordingly	
Documentation Provided by Project Participant:	
Revised Emission Reduction calculation sheet and revised MR	
Information Verified by Lead Assessor:	
Revised Emission Reduction calculation sheet and revised MR version 04	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 19/04/2012
The revised emission reduction calculation sheet have been checked by the assessment team and found that the maximum error correction factor has been applied to the transmission losses for delayed calibration period correctly. The total emission reductions have been come down to 47,297 tCO₂. Thus, CAR#11 is closed	
Acceptance and Close out by Lead Assessor:	Date: 19/04/2012

Annex 3: Team Members Statements of Competency

Name: NAYAN JYOTI DEKA

Status

- Lead Assessor	☒	- Expert	☒
- Assessor	☒	- Financial Expert	☐
- Local Assessor	☒	- Technical Reviewer	☒

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)

☒

Technical Area(s): TA 1.1 Thermal energy generation from fossil fuels and biomass

TA 1.2 Energy generation from renewable energy sources (Wind)

2. Energy Distribution

Technical Area(s):

3. Energy Demand

Technical Area(s):

4. Manufacturing

Technical Area(s):

5. Chemical Industry

Technical Area(s):

6. Construction

Technical Area(s):

7. Transport

Technical Area(s):

8. Mining/Mineral Production

Technical Area(s):

9. Metal Production

Technical Area(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)

Technical Area(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride

Technical Area(s):

12. Solvent Use

Technical Area(s):

13. Waste Handling and Disposal

Technical Area(s):

14. Afforestation and Reforestation

Technical Area(s):

15. Agriculture

Technical Area(s):

Approved Member of Staff by:

Siddharth Yadav

Date:

30/03/2012

Statement of Competence

Name: Ajay Singh Thakur

Status

- Lead Assessor		- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources (Wind)	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 20/04/2012

Statement of Competence

Name: Ramkrishna
Patil

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	x
Technical Area(s): TA 2.1 Electricity distribution TA 2.2 Heat distribution	
3. Energy Demand	x
Technical Area(s): TA 3.1 Energy Demand	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 22/02/2012

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